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MARYLAND FISHERIES

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STREAM REQUIREMENTS FOR FRESH-WATER FISH

By FREDERICK TRESSELT, B. S.

THE STATE OF MARYLAND is blessed with a wide diversity of conditions affecting her inland waters. The cold streams of Garrett County lying at an elevation of 2000 feet or more differ vastly from the meadow brooks of the Cumberland Valley. Frederick County's mountain streams present entirely different conditions of existence than the small gravel runs of Cecil County. In order to preserve and improve the fishing in the numerous inland waters of Maryland and to evolve a rational stocking policy for so doing, the Department of Conservation in 1925 instituted a Stream Survey. This survey did not attempt to make a detailed study of any particular stream, but rather a more general survey of conditions affecting all streams in a given section. It was based upon field experiences brought forth in similar work carried on by the States of New York and New Jersey, together with the experimental data developed by Dr. G. C. Embody at the Fish Cultural Experiment Station at Cornell University.

From 1925 to 1930 six counties were completed, beginning with Washington County in the west and ending in Cecil County in the northeastern portion of the State. Space does not permit a detailed discussion of the results of such a survey, but a brief resumé of the principals involved and their practical application to certain streams, mainly in Frederick County, may be of interest.

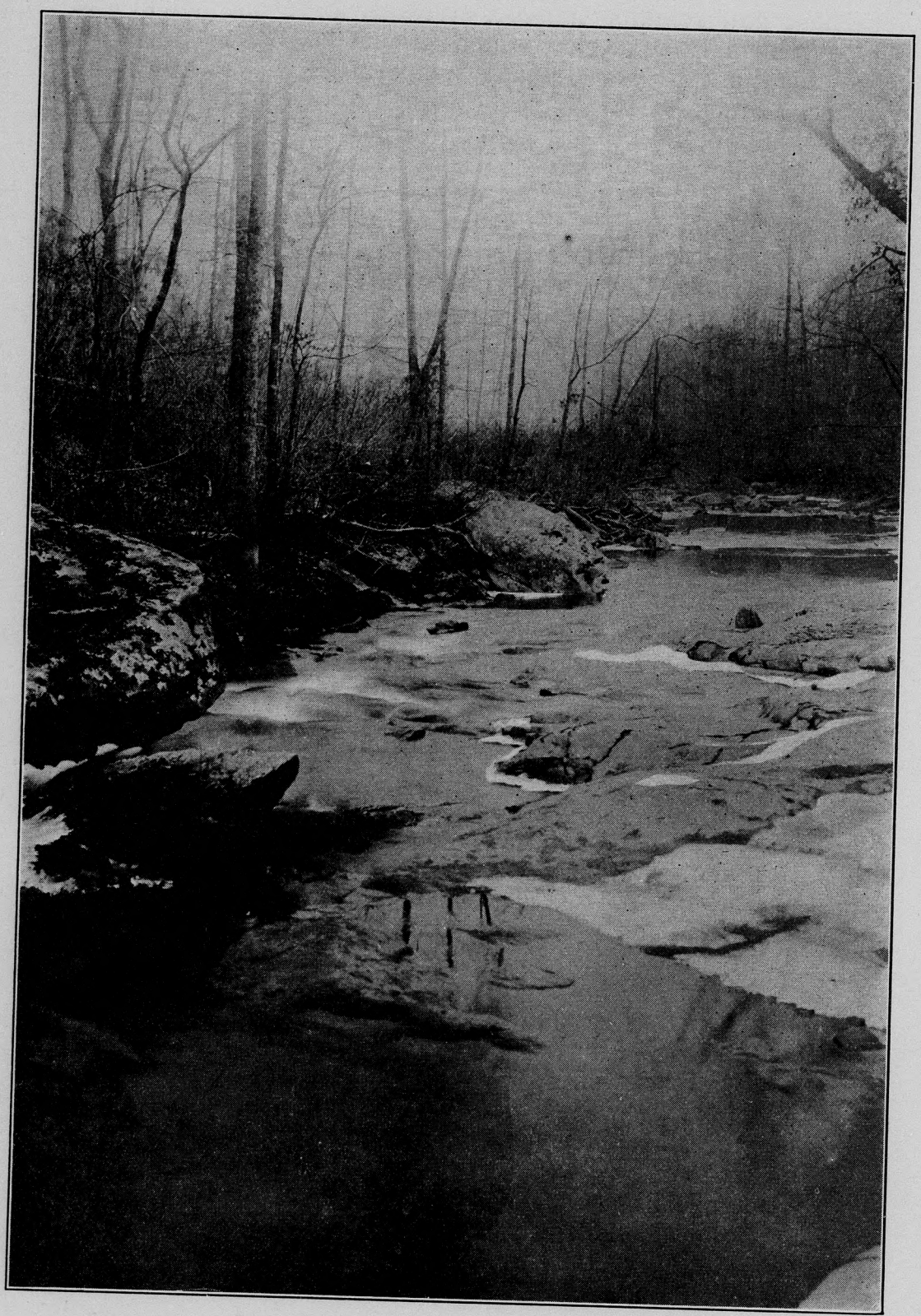
In order to properly stock a stream, there are three main questions to be answered. First, what species of fish will find conditions best suitable for growth and maintenance? Second, how many and what sized fish should be planted in order to maintain the densest population and utilize the food supply to the best advantage? Third, what if anything other than stocking can be done to improve the fishing in the streams?

When we attempt to classify streams as to the species most suitable to be planted therein we find numerous instances of streams unsuitable for stocking with any game-fish. Into this category come those streams which are too small for bass and too warm for trout. Such streams are generally useless for anything except to support a minnow population, and in most instances we find them amply stocked with the various forms of minnows and suckers. Streams that dry up in summer time or those whose rate of flow decreases to such an extent as to leave a series of disconnected pools must also be eliminated from a stocking program. Spring runs and cold brooks too small for angling, that are tributary to larger warm bodies of water can not be stocked. Such small runs are planted with small trout with the expectation that, as they grow in size, they can descend into the larger waters and find conditions suitable for their existence. When such conditions are not present in the larger waters, we cannot stock the small tributaries. And finally, any stream so badly polluted as to render it unfit for fish existence must obviously be eliminated.

We must now divide our remaining streams into those best suited to the warm water species, such as bass and sunfish and those which will support the cold water varieties, such as brook, brown and rainbow trout. In making this decision, our guiding factor is the maximum temperature the stream reaches during the hot summer days. We cannot plant any species of trout in waters that reach 80° F. during the summer, but bass thrive in temperatures of 80° and over. We can, therefore, designate a small-mouth bass stream as one having a width of 25 feet or more, with extensive areas of rubble or gravel for spawning and foraging, and with a temperature range of from 75° to 85° F. in summer. Large-mouth bass streams can be classified as those having about the same temperature range, but with very slow or sluggish current, and having a mud, sand or silt bottom, supporting areas of submerged aquatics, together with the emerging forms, such as lilies, cat-tails and rushes. Ideal streams of this type are found on the Eastern Shore.

There now remains the cool streams, large and small, and our problem is to decide which species of trout should be planted therein. Here again temperature is our deciding factor. Brook trout thrive best in large or small streams, free from pollution, whose temperatures does not exceed 68° F. They will, however, tolerate a temperature up to but not exceeding 75° F. Brown trout, on the other hand, attain their largest size and most rapid growth in a temperature range of 70° to 80° F. It it therefore, apparent that other conditions being favorable, the brown trout will thrive under temperature conditions which would be fatal to brook trout, or which they could only tolerate for short periods of time. The browns also attain a larger size than the brooks. They are not believed to be compatible with other species, and are not generally planted in streams showing favorable conditions for brook trout throughout. However, since they tolerate high temperatures, they can be planted in streams unfavorable to our native species, thereby increasing the range of trout fishing, where such streams exist.

Rainbow trout are even more tolerant of high temperatures than browns, especially in the larger streams having a high oxygen content. They also thrive in the colder waters with the brook trout, and seems to be more compatible with this species than the browns. Most rainbows seem to possess a migratory instinct, which causes them to descend the smaller streams into the larger waters. They have proven a valuable species for stocking where conditions are such as to make it necesary to plant fish of legal size or over with expectation that they will be caught out shortly after planting. The range of trout fishing has been greatly extended in our Frederick County streams since the State started to stock with large rainbows. The wise fisherman now catches his largest fish in the lower portions of the streams where previously no fishing existed. As an example, we can cite the instance of Little Hunting creek, one of the best brook trout streams in Frederick County. This stream presents ideal conditions for brook trout in that portion which flows down the mountain. Back in the days when the streams were stocked with two to three inch brook trout only, everybody fished in the mountain section, because the fish were there. They did not descend into the valley portion of the stream, where conditions were not quite so favorable. A few years ago practically the entire mountain portion of the stream became privately owned, and public fishing was barred. Had the same stocking policy been adhered to the entire stream would have had to be eliminated as a public trout stream, but since

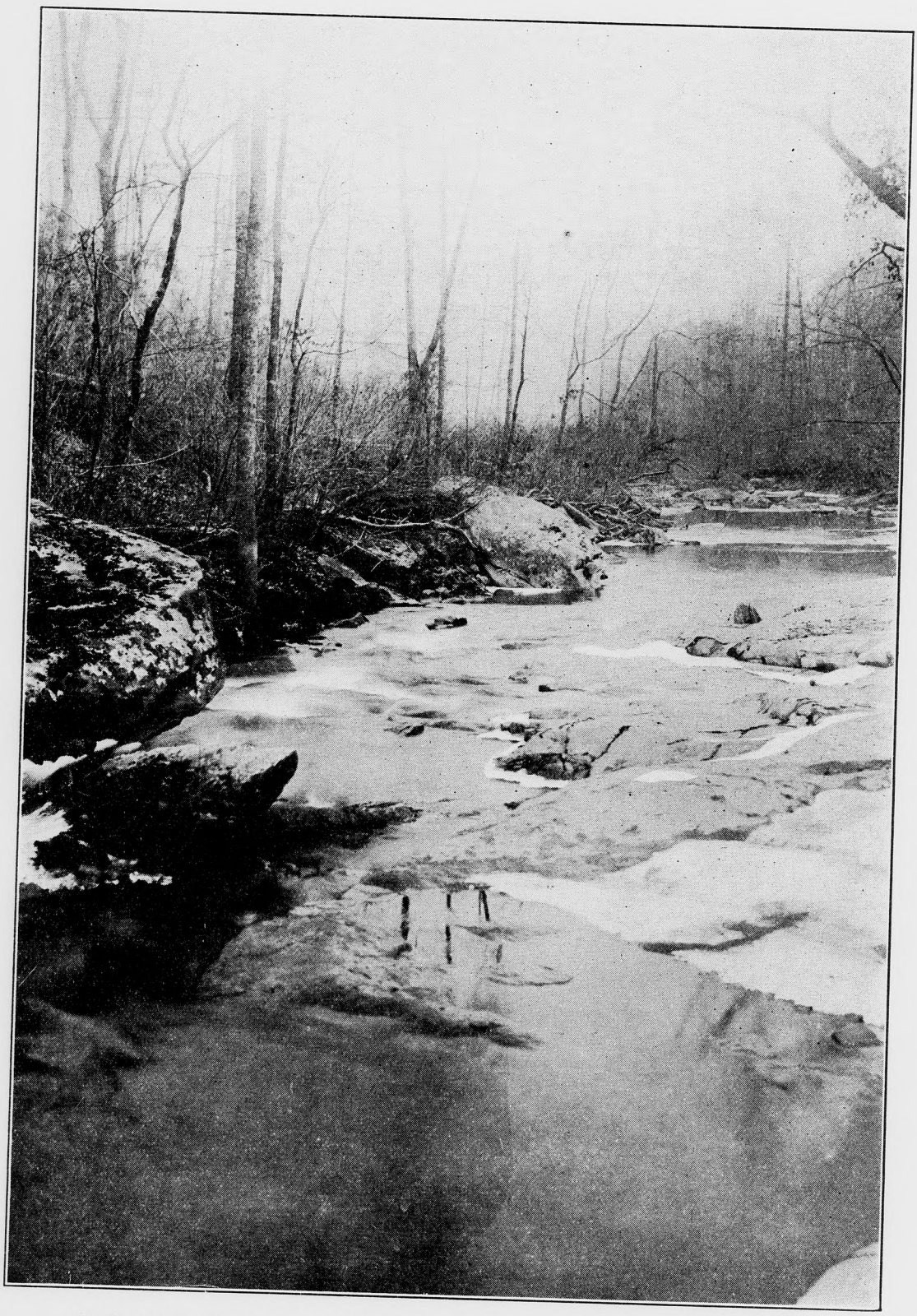


"A WINTER SCENE ON A BROWN TROUT STREAM NEAR BALTIMORE"

the large rainbows have been planted, good fishing prevails in the seven miles of valley stream below the posted area.

We have now seperated our streams according to the species that will find conditions suitable for existence therein, and the question arises as to how many and what sized fish should be planted in each stream. In respect to the bass stream, we have very little information to draw on. There is an urgent need of a through investigation of our bass watersheds. Take for instance, the Monocacy river and its tributaries; it seems foolish to add more small-mouth bass to these streams, when apparently they are overstocked now with under sized bass. Why is it that the large majority of the bass we catch are under ten inches long when the waters we take them from are literally alive with minnows? Are the streams so heavily fished that the bulk of the bass are removed as soon as they reach legal size, or is it due to a downstream migration of the larger fish into the Potomac river? Bass five inches long have been observed spawning in the Monocacy. It takes three years for a bass to mature, so these fish evidently had grown but five inches in this length of time, when prevailing food conditions seemingly were ideal We will not know the solution of these problems until a detailed investigation is made.

With trout streams, however, we have quite a large fund of information to draw from. Let us visualize a trout stream as a seperate universe, populated by numerous forms of aquatic life. The abundance of any particular group of organisms is controlled on one side by its food supply and on the other by its enemies. Therefore, the number of legal sized trout a stream can produce each year is limited. Experiments have shown us the approximate production of pounds of trout flesh in unit areas of flowing water under favorable and adverse food conditions. Other experiments have approximated the mortality we can expect in a stream when we plant fry or when we plant fingerlings until they reach legal size. Our stream survey gives us the area of our streams, the relative abundance of food they contain, and the number and size of their pools. With all this information before us we can actually figure within a reasonable degree of accuracy that a given streams should be stocked with, say 10,800 fry, or 900 three-inch fingerlings, or 540 six-inch fish per mile of stream, to fully utilize the food resources. But in respect to our Maryland streams there is a factor that enters in which obviates the necessity of all these calculations. With the exception of perhaps a few streams in the more isolated section of



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Garrett County there are no public streams in the State which are able to produce enough legal sized trout yearly to supply the demands placed upon them by the fishing public.

Let us take for illustration three Frederick County trout streams which are considered among the best in the State. I refer to Big Hunting creek, Little Hunting creek and Fishing creek. These streams are located less than two hours drive from Baltimore and Washington. They are subject to an invasion of fishermen every year that almost defies description. This early season trout fisherman is a rather peculiar individual, who takes his fishing very seriously. He swarms in on March 31st, camps all night on the stream and starts fishing by flashlight one minute after twelve o'clock midnight! He arrives with a trout rod, a bass rod, or a Bay rod equipped with a star drag reel containing 200 yards of linen line. He uses every conceivable kind of bait from flies to liver. He has purchased his license, has travelled to the stream where the fish are supposed to be, and if he cannot catch any or cannot at least see them in the stream, he rears up on his hind legs, lays back his ears and howls to high heavens that he is being discriminated against. The fish must be there and in sufficient quantities so that everybody can get some.

The solution of this problem is, of course, to plant fish of at least legal size just before the season opens, and to continue such planting during the open season as the demands on the stream necessitate. As spring progresses and this early season frenzy wears away, the number of fishermen decreases materially. It is entirely possible to fish these streams in late May or June without stumbling over fishermen in every pool, and to catch fish that by some strange freak of fortune have escaped the early season massacre. Such fish have become more or less acclimated and have developed that elusive wariness that distinguishes the breed and makes their capture so difficult.

And lastly can we improve our streams in any way to provide better conditions of existence for trout? To a certain extent, yes. We can shade a stream by making plantings along the banks in those sections where the stream is exposed to the full sunlight. Such plantings not only improve the temperature conditions, but augment the supply of terrestial insects which fall from the trees into the water and which constitute perhaps 50% of the food of large trout. Willows seem to be the best adapted for such plantings, because of their tolerance for moisture, their quick growth and the

special attraction of this species for insects. Pools in a trout stream provide shelter from enemies such as herons and kingfishers. They present greater forage possibilities for the fish, because they provide a larger surface area for the reception of terrestial food forms. They are also a collecting place for food being swept down stream, and for the accumulation of detritus which generally support a rich fauna. Any stream having long stretches of shallow riffles can be greatly improved by the construction of dams and barriers eliminating the riffles and forming pools, and in the event that such construction ever does take place on our streams, let us build our dams, barriers and hiding places out of natural materials in a natural way, so as not to detract from the beauty of the stream, and so that the trout fisherman, though he realizes he is catching a liver-fed hatchery trout, can at least retain the impression that he is catching him out of a natural stream and not a hatchery pond.

"POLLUTION—The Nation's Shame"

Radio address by FRANK T. BELL, *United States Commissioner of Fisheries*, from WMAL, Washington, D. C.

I AM GRATEFUL to the National Broadcasting Co., for this opportunity of talking with my fellow Americans about a subject, while not so pleasant, is nevertheless most vital to our common welfare, regardless of our walk in life. I want to speak very plainly and very frankly. When a condition prevails which threatens the health of our children and loved ones, we become immediately concerned, and then take steps to eradicate the condition, or shelter them from its contagion. We well remember the terrible epidemic of flu during the World War days, and the vigorous precautions we took in the home to protect our families. We went a step further. Our City, State and even Federal Government came into the picture. We shall never forget the flu masks everyone was compelled to wear, schools were closed down, Governmental health agencies were taxed beyond capacity.

Today we are faced with another public menance, which strikes 'home' to each of us. I refer to the nationwide problem of POLLUTION of our waters. Today many of our streams and waterways, which only a few years ago were defined as a

(*Continued on Page* 13)

MARYLAND FISHERIES

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OYSTER DREDGERS DIFFICULTIES AND PENDING LEGISLATION

IN THE NOVEMBER issue of MARYLAND FISHERIES, the Conservation Commissioner described the conditions under which dredging operations were being carried on above Sandy Point, where the entire fleet had assembled and were working the upper bay oyster bars. By the middle of December, this fleet of boats had reduced the supply of merchantable oysters to the minimum. Cull law enforcement became impossible, and dredge boats were obliged to throw thousands of bushels of oysters back on the bars and a number of buy boats were arrested.

By December 20, the fleet had to stop operations in this section of the bay because of the impossibility of any longer securing cargoes of oysters to meet requirements. Some dredgers went down the Bay shore to try the oysters in that region; others went home for the Christmas holidays. In every case the captains of the vessels were told that it was useless to return to the upper bay bars if they could not cull the oysters.

About January 1, part of the fleet returned, but after two days work the deputy commanders stopped their operations. A number of the vessels then went to Annapolis, where the Legislature had convened. The Conservation Commissioner was asked to come to Annapolis on the 9th of January to meet Senator Phoebus of Somerset, Senator Dodson of Talbott and various Representatives and dredging captains to see if some plan could be worked out whereby they would be enabled to continue their operations for the balance of the season.

The meeting was held in the State House on this date, and the Conservation Commissioner told the Senators that if they saw fit to pass legislation to empower the Department to regulate the taking of oysters above Sandy Point for the balance

of the season, that he would do all he could to keep the dredgers occupied, provided there was sufficient market to warrant operations, but he desired it understood that *this was not a conservation measure,* but merely a *relief measure,* as in his opinion the bars were worked down sufficiently close, and that the oysters that were mostly under three inches would, if left on the bars, be suitable for the fall of 1935.

The matter was taken up with Governor Nice, and it was agreed that if an emergency bill were passed, the Conservation Commissioner would have full authority to regulate the taking and catching of oysters above Sandy Point for the balance of the oyster season.

An amendment, however, was offered to this bill, which would extend the provisions of the bill to include the tonging areas of the State as well. While this was thought feastible at the time, considerable opposition developed, as it was realized that this meant the three-inch cull law was to be nullified all over the State for the rest of the season.

As this publication goes to press, the bill has been introduced and is now in the Chesapeake Bay and Tributaries Committee of the Senate.

"POSSIBILITIES OF MARYLAND AS AN OUTDOOR STATE"*

By MERLE E. TOWNER

WHAT a fine thing it will be for Maryland when a majority of our people realize the great privileges to be had in "out-door life" so bountifully provided for. This must be an unselfish realization. Indelibly written across the surface of this "Maryland" is the history of man's past activities. Forest fire, pollution, soil erosion, forest elimination, all have made their mark to the shame of those who have been wilful, or indifferent parties to it, and to those who now make no effort to prevent it.

Sometimes we stop to consider why it is that God's created creature, man, should be or should want to be destructive. Endowed as he is with sufficient intelligence to use with purpose and profit the things provided for him his activities when

*Editor's Note—This paper was read before the Maryland Outdoor Life Convention. Extracts have been selected as space did not permit the printing of the entire address.

destructive almost challenge the purpose of creation. Our second thought and observation gives us courage, however, when we gather evidence that there are those (in over increasing numbers) in state after state, in movements nation-wide and even international, who are recognizing the value of "wild life," the sacredness of nature's gift, the responsibility of mankind to his Maker and even the symptoms of unselfish endeavor. Many of us have seen state after state take steps through well organized conservation departments to conserve, preserve and properly develop the wonderlands of the great outdoors.

The man who deliberately or carelessly sets a forest fire; who wantonly kills; who pollutes the streams and lakes; who causes erosion of soil; who destroys fish life; who takes beyond measure from the storehouse of our great salt waters; who gives no thought of being constructive and not destructive, must be brought to his senses. If it must be, let it be through drastic law, well enforced, that he be brought to book. The better way of course is through the power of education and should begin in the home and continue in the school and college.

Our politicians must be taught that conservation is not a political football, a matter of political spoilsmanship, a matter for trade and barter, but a possession of the people, backed by them in all seriousness of mind and purpose.

Each of us must join in a move to support our Conservation Department and to back its constructive effort. We must have such a department: we must work intelligently through it if we are to have what we so much want and need—abundance of seafood life, of fresh water fish, of upland game, of bird life, of flora and fauna, and of sanctuaries for all such life.

We must be wise enough to work concertedly through a well organized Conservation Department, to insure to ourselves and for posterity an abundance of all that is expressed in the term of "Outdoor Life and Privilege." We must be willing to help pay for all this. We must be willing also to support research work, to have our scientists ever busy. We must respect and support our Department of Forestry and understand the absolute necessity of its work. Without that effort practically all others must cease.

Our great commercial interests who deliver into nature's storehouses and bring to our tables the many forms of sea food or fresh water food must be among the most enthusiastic supporters of conservation effort. They must not be a destructive factor. The cry of "God given rights" is one mostly

used to cover destructive practice. The so called "sportsman" who destroys or does not respect the "rights of others" and is a destructive factor must be dealt with.

In fact in all our State of Maryland the effort must be and it is going to be along the progressive lines of building up and not tearing down.

There must be a united front—a joining of all the constructive forces.

We must work advisedly and not loosely.

When we go before our Legislators, our Governor, or any of our governmental departments, we must go unitedly and unselfishly well prepared. We must develop and maintain respect, not alone for the strength of our numbers, but more particularly for our purpose and fairness. This great work we are engaged in is one that challenges the best talents of any man or men. It gives the opportunity for a truly great accomplishment.

Following these thoughts let us look more directly at the State of Maryland and briefly take measure of what it has to offer. As individuals we are proprietors of an area of 12,210 square miles, composed of land 9,980 square miles, and water 2,350 square miles. This area is, as you know, divided by the great Chesapeake Bay into two unequal parts, known to you as the Eastern Shore and the Western Shore. Over on the Eastern Shore we find eight splendid rivers: the Elk, Sassafras, Chester, Choptank, Miles, Nanticoke, Wicomico and Pocomoke. It is a place of wonderful outdoor life possibilities and privileges.

On the Western Shore the rivers are: Gunpowder, Patapsco, South, Severn, Patuxent and Potomac. At the headwaters of this wonderful Chesapeake Bay is the mighty Susquehanna. These splendid rivers and this wonderful bay comprise a body of water second to none in the confines of any state and second to none in their potential teeming water and wild life, giving to Maryland a remarkable natural source of outdoor life and food supply.

The temperature of your State: summer average 75.5 degrees—winter 36.9 degrees—affords a remarkably fine climate.

In scenic effect Maryland is one of the wonder states, and in going from north to south, or east to west, you cross the Blue Ridge range, with elevation of 300 to 700 feet above tidewater, over the great Appalachian chain which passes through

the west part of the state, particularly Allegheny and Garrett Counties where the highest peaks reach 3,700 feet.

Originally Maryland was well forested, the principal woods being pine, chestnut (this chestnut now fast disappearing), oak (of which there is none finer anywhere in the world), hickory, walnut, etc. The forests have been cut down and burned to such an extent that Maryland now imports approximately 80 per cent of her requirements in lumber and lumber products. These forests were not only valuable for their products, but valuable in affecting your climate, particularly the rain-fall, and their protecting influence against the erosion of soil, which erosion, as you know, causes the choking and stopping of streams. These forests also provide cover for wild life. When we speak of climatic conditions affected by forests, we have but to refer to Florida, where the frost or freezing line has gradually moved through the state as the forests have been cut down. That forests can be perpetuated was well protrayed in an article in the "National Geographic," which points to Sweden as having used its forests for over 1,100 years, and through protective measures perpetuated these forests so that they are now practically as valuable as ever. What will we do to bring back the forests of the State of Maryland?

As we speak of wildlife, let us not over look the fact that we can have in this State an abundance of live game, that is, wild geese, ducks, swan, wild turkey, deer, rabbitt, quail pheasant, woodcock, grouse, reed bird, squirrels and other fur-bearing animals.

Our splendid rivers are not only an insurance of ample water supply for home comsumption, but can be made to furnish your state with great water power development. The marsh lands along the river and bay have, as you well know, developed an important muskrat industry.

From the earliest period of history of the State of Maryland the fisheries have attracted people. The waters of Maryland have swarmed with edible fish of nearly every variety, and it is stated that there are nearly one hundred varieties of sea-food life, which include the black bass, the rockfish, or striped bass (both of which need protection), the bluefish, the mighty shad, the oyster, terrapin, crab and so on. You certainly are familiar with the fact that your Conservation Department has extended splendid efforts to bring back in quantity and to protect these valuable sources of food suply.

It is not too much to ask that every individual interest himself or herself in the institution of proper laws and their enforcement, particularly laws to stop destructive practices. Among the things which you should be interested in, are the migratory bird sanctuaries, the propagation of game birds, of fish and sea food, re-forestation, the prevention of destructive methods of taking wildlife in season or out, the development of inland lakes and ponds and all that goes with the scientific and proper development of outdoor life.

Many states are finding that people are attracted to them where their outdoors are conserved and where their streams provide good fishing and the forests good hunting; where there are fine parks and woods for the people; where there is an abundance of outdoor life and opportunity in health-giving sources. It is up to each of us to be intelligent and energetic enough to bring back to the State of Maryland the abundant glories of the outdoors.

"POLLUTION—The Nation's Shame"

(*Continued from Page 7*)

flow of pure, healthgiving water, may be accurately described by the definition of pollution—physically unclean, contaminated, infected, impure, unsuitable for human consumption and not even fit for fish to live in.

As cloudy and dismal as this picture is, let us look at it sanely and sensibly for if man brought about this condition, surely man can correct it.

When the American population began to increase and our industrial life expand it was only a natural development that factories would be centralized along our water courses. Our growth was so rapid and our resources so plentiful that little thought was given to preserving our water supplies in their natural pure state. When communities were scattered and industries were small, the effects of stream pollution were usually of limited extent. Our streams carried away the household wastes, the sawdust and shavings from our lumber mills, the waste liquor from our tanneries, the scrubbings from our textile mills, the drainage from our mines, and once they were removed from immediate notice were soon forgotten. But today, the picture has changed entirely. Individuals and communities can no longer live to themselves alone, for domestic

and industrial wastes are produced in such great volume that in many coastal and interior waters, their damaging effects are projected down stream through several states, and the problem of control, both from a view of public health and from the point of view of conservation of natural resources, becomes of national rather than local interest. This applies equally to sewage and industrial waste.

Just what condition do we now find? One of our eastern cities alone dumps 95,000,000 gallons of human waste and sewage a day into one of our most beautiful, historical rivers. Another inland city throws 600 to 800 tons of raw garbage a day into one of our great rivers; one of our eastern states releases daily into its streams 3,000,000 pounds of concentrated sulfuric acid, one of the deadliest known poisons, with the result all fish life has been killed and its devastating effect is seen 500 miles down the river where all mussel life has been exterminated; another state, whose tributaries feed into the same river artery, deposits 5,000,000 pounds of this same deadly posion, with a result that the artery itself must carry 8,000,000 pounds daily where it is obvious no fish life can live. In one western state, 50 miles of the most picturesque mountain stream, which otherwise would be as beautiful a trout stream as could be found anywhere in the country, is entirely devoid of all fish or aquatic life because of mine wastes, and 6 lakes touched by this water are likewise barren of all life. Two or three of our principal inland rivers on which several large cities depend for their drinking water supply have been polluted to such an extent that by the existing methods of water purification, namely chlorine, it is barely possible to obtain water suitable for human consumption; and with the population growing, industries increasing, we have reached the very peak of reasonable safety. One of our own Bureau of Fisheries vessels, when tying up at one of our principal inland wharfs, has to attach a pipe to shore water, because the river water is not only unfit for use in washing one's hands, but is so vile that we do not dare pump the same through the engines.

I know these few examples may prove shocking, but we must face realities and consider the problem in the light of cold reason and scientific knowledge, with out emotional appeal

Now that we have arrived, so to speak, what are we going to do about it?

Control of streams is vested entirely in the states themselves and the only Federal jurisdiction is the War Depart-

ment's authority to keep navigable waterways suitable for navigation purposes. This, in the common sense analysis, resolves itself down to the eradication of oil pollution, and it is obvious that oil pollution must become very flagrant before it seriously menaces water commerce.

We do not have to investigate very far to quickly see that control of pollution is an interstate problem, and if its dreaded advance is to be checked, for the well-being of our people, some interstate compact must be formed. Our commercial waterways cannot be kept from contamination when the tributaries flowing into them from the several states are not protected from pollution. Similarly, it is of no use for one state to check the menace, when a state above it does nothing. Likewise, a very practical aspect of the condition grows out of our industrial approach. Unless all states are united, unfair competition in industries arises. Why should a state by creating laws prohibiting water contamination, lose industries that threaten to move to an adjoining state which permits them to dump acids, offal and other industrial waste into streams?

No single national body has ever given adequate attention to the problem of stream pollution from the point of view of conservation. The National Health Service is concerned chiefly with the sanitary and health aspects of pollution; the War Department, alluded to, has interest only in navigational aspects; the Bureau of Standards has from time to time conducted research on reclaiming trade wastes in order to produce by-products; the Bureau of Mines has done excellent work in preventing stream pollution from mine wastes, but none of these activities go far enough to safeguard either human or aquatic life.

Nationwide interest in this problem has been aroused. On December 6, Senator Augustine Lonergan, of Connecticut, in conjunction with the Hon. D'Arcy Magee, of Washington, D. C., national vice-president of the Izaak Walton League called Federal officials having authority in water uses, along with the outstanding conservationists of this country, into conference with the Secretary of War, and there was launched a movement to coordinate the various governmental agencies both state and national in a war on pollution. In April of this year, it was my privilege to call on the conservation commissioners from the various states into conference in St. Louis, and they formed themselves into the National Planning Council of Commercial and Game Fish Commissioners, who placed

at the top of their agenda, "Purification of our streams." This coordinated Federal and State agency is committed to co-operation on this movement. The President's National Resources Board is giving its attention to the utilization of our water resources as a whole. The State Planning Boards are studying the problem, and with an aroused public opinion, and with industrialists, conservationists, State and Federal agencies working in close cooperation, we can conquer this noxious condition. Modern science has already shown the way. Many industrial waste products can be turned into profit. Many municipalities are taking advantage of the Government's liberal policy under Public Works Administration in assisting cities to build modern sewerage disposal plants. To the youth of this country, it is a recreational crisis and to all the rest of us an economic calamity threatening our social structure if we fail in protecting our water supplies.

"Dr. Theobald Smith, President of the Rockfeller Institute for Medical Research, whose scientific discoveries have aided in curbing epidemics of typhoid fever, cholera, maleria and yellow fever, who died in New York on Monday of this week, has issued a challenge of self protection to all of us, in his timely admonition, "The American people must destroy pollution or pollution will destroy us."